Name:

Date:

1. Find the solution to this system of equations:

-5*x* + *y* = 12  
-3(*x* – 2*y*) = 4

2. Given these functions:

ADD(a, b) = a + b

SUBTRACT(a, b) = a – b

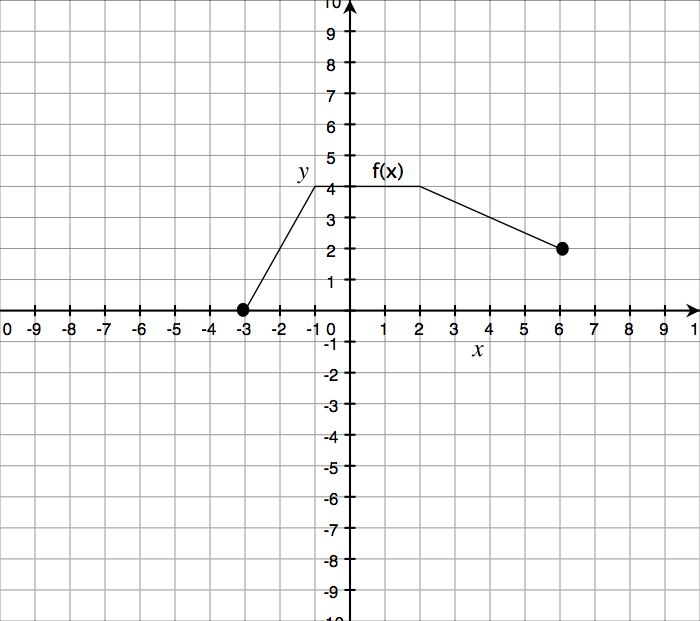
1. Find ADD(7,10)

1. Find SUBTRACT(2,-4)
2. Is ADD(2, ADD(x, -3)) = ADD(2x,-1)?
3. What is SUBTRACT(b, ADD(b, -b))?

3. Given the graph of f(x), graph g(x) and h(x).

g(x) = f(x + 3) + 5

h(x) = -2f(x)



4. Complete the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Location of Point on the Original Function**  **y = f(x)** | **Translated / Transformed Function** | **Type of translation / transformation**  **(Check all that apply)** | **Location of Point on the Translated Function** |
| (10, 10) |  | [ ] Vertical shift up by \_\_\_\_\_\_\_  [ ] Vertical shift down by \_\_\_\_\_\_\_  [ ] Horizontal shift left by \_\_\_\_\_\_\_  [ ] Horizontal shift right by \_\_\_\_\_  [ ] Vertical stretch by \_\_\_\_\_\_  [ ] Vertical compression by \_\_\_\_\_  [ ] Reflection over the x-axis |  |
| (-5, 6) |  | [ ] Vertical shift up by \_\_\_\_\_\_\_  [ ] Vertical shift down by \_\_\_\_\_\_\_  [ ] Horizontal shift left by \_\_\_\_\_\_\_  [ ] Horizontal shift right by \_\_\_\_\_  [ ] Vertical stretch by \_\_\_\_\_\_  [ ] Vertical compression by \_\_\_\_\_  [ ] Reflection over the x-axis |  |

5. Describe the translation of each graph from f(x) to g(x).

f(x) = x2 g(x) = (x – 12)2 + 6

f(x) = |x – 5| + 1 g(x) = |x + 2| – 8

6.Evaluate and simplify each expression.

Let , , , 

**  **

**** ** **

7. Evaluate and simplify each expression.

**f:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **x** | 5 | -5 | 3 | 8 | 0 | 1 | 9 |
| **y** | 12 | 10 | -1 | 3 | 0 | -5 | 7 |

**g:**

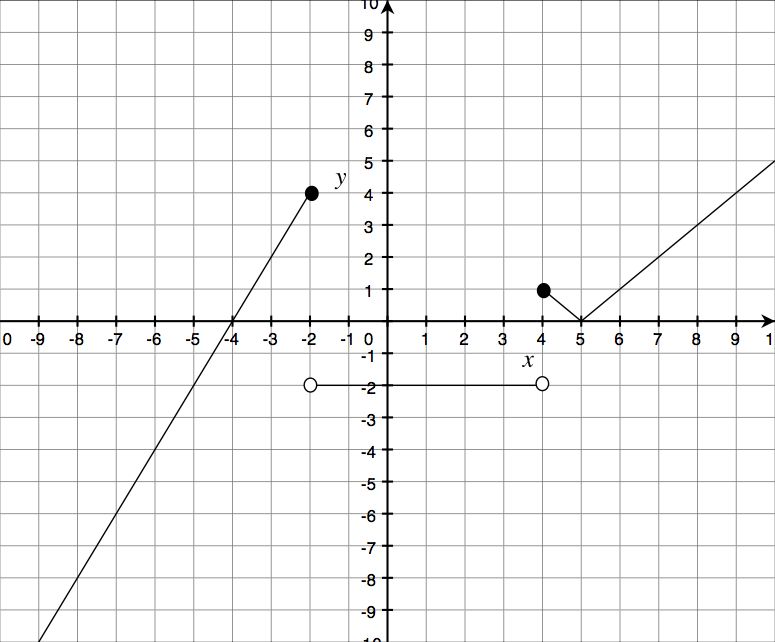
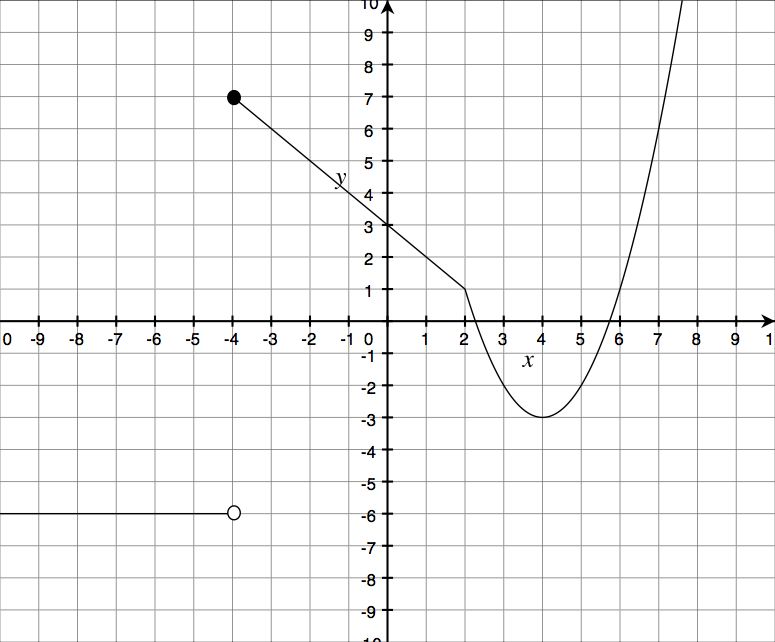
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **x** | -3 | 2 | 8 | 1 | -4 | 7 | 6 |
| **y** | 0 | -5 | -5 | 8 | 1 | 3 | 5 |

f(5) = g(1) = f(-5) – g(2) =

f(1)g(1) = [f(9) + g(8)]f(8) = f(g(8)) = g(f(9)) =

8. Evaluate each expression.

f(-4) = f(4) = g(-2) = f(-20) =



*f(x)*

*g(x)*

f(g(1.5)) = g(f(4)) = f(g(4)) = (f + g)(7) =

9.

Let , , .

Find each of the following, and simplify.

1) 

2) 

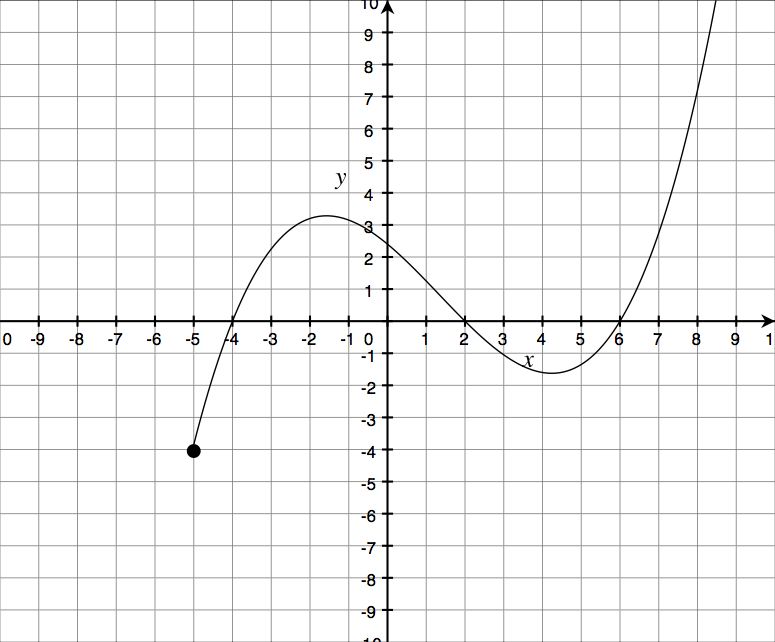
3) 

4) 

5) =

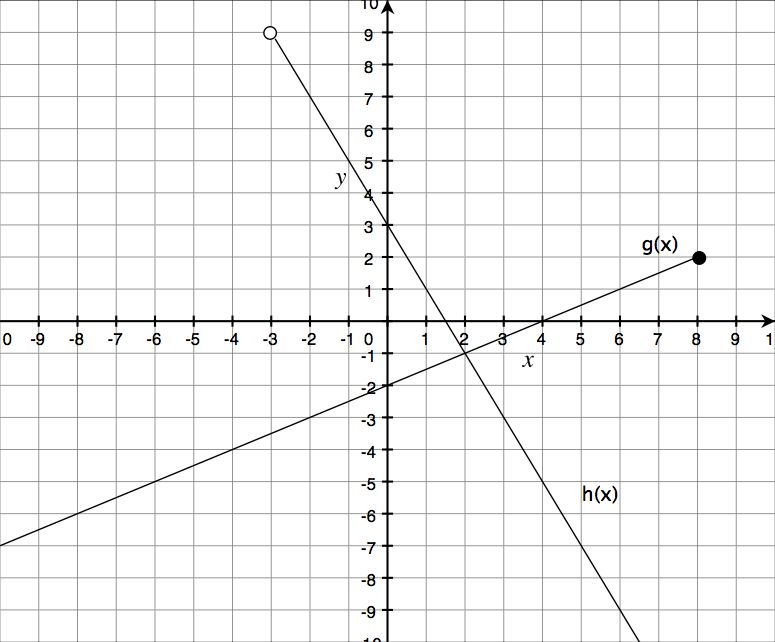
**Part 3: Graphical Analysis**

*f(x)*



*f(x)*

1. What is the domain of f(x)?
2. What is the range of f(x)?
3. For what values of *x* does f(x) = 0?
4. What is the value of f(x) when *x* = 0?
5. Over what intervals is f(x) > 0?



1. What is the domain of g(x)?
2. What is the range of g(x)?
3. What is the domain of h(x)?
4. What is the range of h(x)?

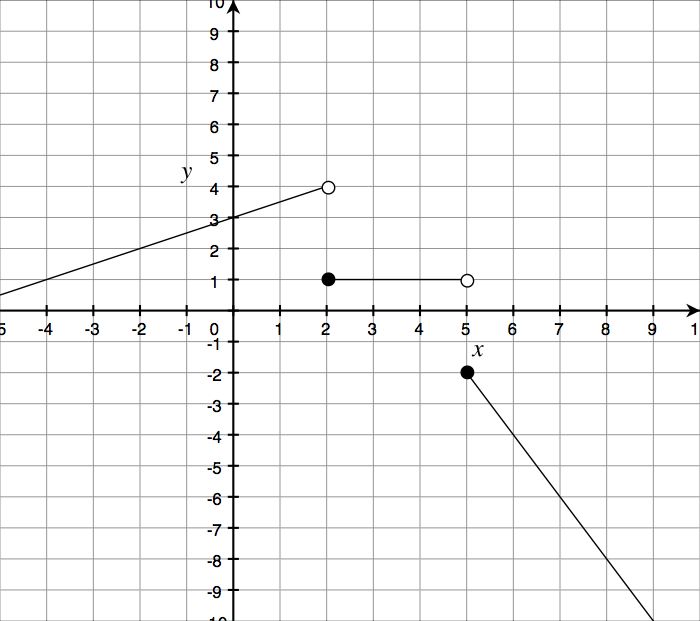
10) 

11) 

12)  13) 

**Part 4: Piecewise Functions**

Write the piecewise function f(x) that would produce the following graph: **(6 points)**



Graph f(x) on the coordinate plane. **(6 points)** Then, find **exact** answers for the evaluation problems that follow. **(1 point each)**



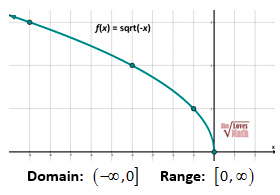








9. Determine whether the two functions are inverses. State how you know.   


10. Use the following graph to answer the questions.  
 

  
a) Draw *f(x)* rotated 180° about the origin, and state the equation of the transformed function.

b) Draw *f(x)* reflected across the y-axis, and state the equation of the transformed function.



c) Draw *f(x)* reflected across the x-axis, and state the equation of the transformed function

